Submitted By: Melinda Greenberg

**Topic:** Introduction to Renewable and Nonrenewable Resources

**Grade Level:** 6

**Objectives:** At this point in the year we have already discussed how a power plant works and that most run off of coal, natural gas or uranium but have not discussed these resources in detail.

-Students will be able to understand why resources are considered renewable vs. nonrenewable and what some of the problems and benefits are associated with each.

-Students will use various texts to gather information that will then be shared with their peers.

**Time Frame:** 3 periods

**Standards:**

CCSS.ELA-LITERACY.RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

Scope and Sequence LE. Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

**Danielson Components:** 3C Engaging Students in Learning, 3D Using Assessment in Instruction

**Lesson Preparation/Materials:** Students will be arranged into 8 groups (3-4 students in each).

-Natural Resource bins (wind, solar, biomass, hydro, coal, oil, nuclear, geothermal) will be labeled for each group and contain texts at varying reading levels, post-its and highlighters.

-Printed Task Sheet (one per group).

-Printed Rubric (1 per student).

-Research pages shared on google docs, along with my natural gas sample.

-1 laptop per group.

**Lesson Procedure:**

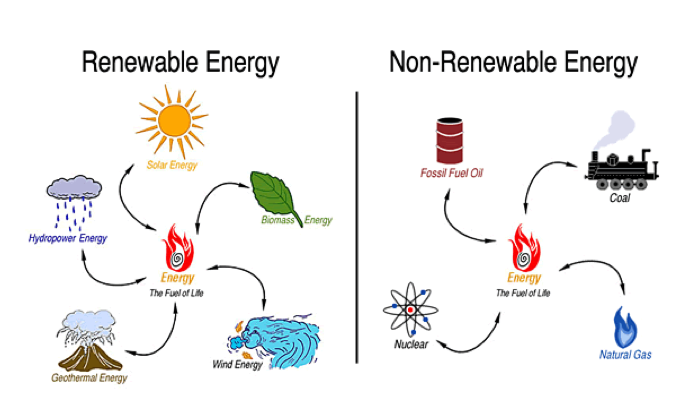
**1- Do Now:** Students will copy the chart below and fill it in as best they can.

I will circulate to see what students are jotting and use as a quick pre-assess to see what my students already know.

|  |  |  |
| --- | --- | --- |
|  | What I know. . . | What I wonder . . . |
| Renewable resources |  |  |
| Nonrenewable resources |  |  |
| Fossil fuels |  |  |

-Typically I find that students can explain what the words renewable and nonrenewable mean, but that they lack understanding as to why resources are renewable and nonrenewable.

That being said, we will develop a definition of these words together as a class after students share some prior knowledge and questions/wonderings.

**2- Teach/Model:** Once we have developed our definitions, I will display the following diagram so students can see the renewable vs. nonrenewable resources they will soon become experts on.

I will display the task sheet (shown below) on the board and talk about the assignment and expectations.

Each student will then be given a rubric to look over and refer to as I share my google doc on natural gas. I will probably show mistakes/missing parts in my work so students see how information can be lacking or difficult to understand (they can turn and talk regarding my work as they look at the rubric). I will emphasize the importance of paraphrasing and citing sources. For this activity I will number each source in their basket so they can simply write a number instead of listing out book titles, authors and whole websites, especially since I am providing the resources. However, I will provide a separate google doc with a few websites for students to use if they require more information. They are free to add websites they find to this list, which will also be shared with the class.

Lastly, research teams will be assigned. If any are interested in becoming experts on a certain resource they can choose that natural resource bin, if not, I will assign the resources. Each group will be given 1 task sheet to make sure they are completing all parts of the assignment by using the checklist.

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**Grade 6 Energy Research Task**

**T.P.** To become familiar with the various renewable and nonrenewable natural resources used to generate energy and what some of the advantages and disadvantages are of each.

**Task:** Using the texts provided, research teams will gather information about one type of natural resource we use to generate energy. Once all information is gathered, we will share out with the class in order to gain a better understanding of how these resources are acquired and used. All the information gathered will be shared on google docs for the entire class to use as we move forward in this unit of study.

**Follow the guidelines below to ensure you complete all parts of this task!**

|  |  |
| --- | --- |
| **Steps to complete . . .** | **Check off each step as you go!** |
| 1- Using the computer provided, access your energy research table by logging on to google docs and finding the assignment that I shared with you. |  |
| 2- Review the questions in the table with your team. Begin research by looking through the texts provided. Use the post-it notes to mark any relevant information and share with your group as you go. Feel free to highlight the printed resources. |  |
| 3- Enter research into the table, making sure to paraphrase as best you can. Don’t forget to provide the source number at the end of each text box to show where the research was found. |  |
| 4- Once all boxes are complete, review for accuracy and coherence.  Will my classmates understand what we have written? Edit if necessary. |  |
| 5- Review the rubric provided. Make any necessary changes to your table.  Be sure all members of your research team complete a separate rubric. |  |

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**(My Research Page: this one doesn’t have mistakes, I hope). Each google doc will have the same series of questions but with a different picture and title)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Energy Source** | **a) What is it?**  **b) Where is it found?** | **How is it used?** | **What advantages are associated with using this energy source over others?** | **What disadvantages are associated with using this energy source?** | **Other Info.** |
| **Natural Gas**  https://lh4.googleusercontent.com/Ie4oaEUAXU8e9xQ8hoQbpcnZ0wZMLFC1zmYkIZFCxRtLGPCsZQgNvdQF0Wo0L6trVzXnvvbvaTwOEJYTMkIO0kkHLXPRz1az8OSO2VkswxSng_u3U6YIdhYV8QcCZvTjWTQ2DOeR2W8bOOD8KA | a) a fossil fuel found in the form of a gas; it is invisible and odorless.  b) it is found underground just like oil and coal.  Drills are used and pipes are placed under the earth until it reaches the pocket of natural gas.  Since it is a gas, it can flow upwards through the pipes. | Natural gas can be used in a power plant as fuel to make electricity.  Natural gas is also piped into homes and businesses and used to power furnaces (to generate heat) and for gas stove cooking. | Natural gas is preferred over oil and coal because it is the cleanest burning fossil fuel; meaning it releases less pollution into our atmosphere. | Since natural gas is highly flammable, it can be very dangerous.  If there is an accident at a power plant or in a building there could be an explosion. | -Although the United States has a large supply, it is not always easy to reach. One method of reaching the natural gas is called fracking; this method is thought to be unsafe for people and the environment.  -Gas companies add an odor so you know if it is leaking. |
| **Source #:** 1,2 | **Source #:** 3 | **Source #:**1 | **Source #:** 2 | **Source #:** 3, 4 |

**4- Share:** Once students have completed their research page, they will share it with their peers. Since they are the experts, they will teach the class about their natural resource.

**5- Next Steps:** I would like to do a debate. Now that everyone knows more about these resources they can start to form their own opinions on the issue of natural resource use. They can split up into new groups based on shared ideas and conduct more research to develop an argumentative speech, which can then lead to a debate. I would also like to help them explore some of the renewable energies using the resources we explored this past week.

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**Energy Research Rubric for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_**

**Research Team Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Natural Resource: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **4** | **3** | **2** | **1** | **Student** | **Teacher** |
| **Content**  **X3** | -Each research question is thoroughly answered, relevant and coherent (easy to understand).  -Research is properly paraphrased in students’ own words.  -At least 1 advantage and disadvantage are explored.  -“Other info” is optional, time permitting. | -Each research question is answered and coherent.  -Most of the research is paraphrased.  -Advantage and disadvantage are present. | -All questions are answered but may lack detail and/or coherence.  -Research is not entirely in students’ own words. | Most research sections are incomplete and/or lack coherence. |  |  |
| **Sources**  **X1** | 3 or more texts were used to gather information. | At least 2 texts were used to gather information. | It is evident that 2 texts were used though not all sources are listed. | Sources are missing throughout. |  |  |
| **Collaboration**  **X1** | I was always an active member of my research team. I remained on task and collaborated with my group on all parts of the task. | I was an active member of my research team. I remained on task and collaborated well on most parts of the task. | I was not always an active member of my team. I had difficulty remaining on task and collaborating at times. | I was not an active member of my research team and had trouble collaborating throughout the task. |  |  |

**Total = \_\_\_\_\_\_/20**